

## Complete Summary

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### GUIDELINE TITLE

ACR Appropriateness Criteria™ for chronic elbow pain.

### BIBLIOGRAPHIC SOURCE(S)

American College of Radiology (ACR), Expert Panel on Musculoskeletal Imaging. Chronic elbow pain. Reston (VA): American College of Radiology (ACR); 2001. 5 p. (ACR appropriateness criteria). [29 references]

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## SCOPE

### DISEASE/CONDITION(S)

Chronic elbow pain

### GUIDELINE CATEGORY

Diagnosis

### CLINICAL SPECIALTY

Family Practice  
 Internal Medicine  
 Nuclear Medicine  
 Orthopedic Surgery  
 Radiology

### INTENDED USERS

Health Plans  
 Hospitals

Managed Care Organizations  
Physicians  
Utilization Management

#### GUIDELINE OBJECTIVE(S)

To evaluate the appropriateness of initial radiologic examinations for chronic elbow pain

#### TARGET POPULATION

Patients with chronic elbow pain

#### INTERVENTIONS AND PRACTICES CONSIDERED

1. Computed tomography (CT)
  - With or without contrast
  - Without intra-articular contrast
  - Arthrogram, positive contrast
  - Arthrogram, air only
  - Arthrogram, double contrast
2. Magnetic resonance imaging (MRI)
  - With intra-articular contrast
  - Without intra-articular contrast
3. Tomography
4. Ultrasound (US)
5. Radionuclide bone scan

#### MAJOR OUTCOMES CONSIDERED

Utility of radiologic examinations in differential diagnosis

### METHODOLOGY

#### METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

#### DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The guideline developer performed literature searches of recent peer-reviewed medical journals, primarily using the National Library of Medicine's MEDLINE database. The developer identified and collected the major applicable articles.

#### NUMBER OF SOURCE DOCUMENTS

The total number of source documents identified as the result of the literature search is not known.

## METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Expert Consensus (Delphi Method)  
Weighting According to a Rating Scheme (Scheme Not Given)

## RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

## METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review with Evidence Tables

## DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

One or two topic leaders within a panel assume the responsibility of developing an evidence table for each clinical condition, based on analysis of the current literature. These tables serve as a basis for developing a narrative specific to each clinical condition.

## METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus (Delphi)

## DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Since data available from existing scientific studies are usually insufficient for meta-analysis, broad-based consensus techniques are needed to reach agreement in the formulation of the Appropriateness Criteria. Serial surveys are conducted by distributing questionnaires to consolidate expert opinions within each panel. These questionnaires are distributed to the participants along with the evidence table and narrative as developed by the topic leader(s). Questionnaires are completed by the participants in their own professional setting without influence of the other members. Voting is conducted using a scoring system from 1-9, indicating the least to the most appropriate imaging examination or therapeutic procedure. The survey results are collected, tabulated in anonymous fashion, and redistributed after each round. A maximum of three rounds is conducted and opinions are unified to the highest degree possible. Eighty (80) percent agreement is considered a consensus. If consensus cannot be reached by this method, the panel is convened and group consensus techniques are utilized. The strengths and weaknesses of each test or procedure are discussed and consensus reached whenever possible.

## RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

## COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

## METHOD OF GUIDELINE VALIDATION

Internal Peer Review

## DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Criteria developed by the Expert Panels are reviewed by the American College of Radiology (ACR) Committee on Appropriateness Criteria and the Chair of the ACR Board of Chancellors.

## RECOMMENDATIONS

### MAJOR RECOMMENDATIONS

ACR Appropriateness Criteria™

Clinical Condition: Chronic Elbow Pain

Variant 1: Suspect intra-articular osteocartilaginous body; plain films nondiagnostic.

Radiologic Exam Procedure	Appropriateness Rating	Comments
CT		
With or without contrast	8	If double contrast is used, dose of less than 0.5 cc of contrast should be used.
Without intra-articular contrast	2	
Arthrogram, positive contrast	2	
Arthrogram, air only	2	
MRI		
With or without intra-articular contrast	6	May show donor site and additional pathology.
Tomography	2	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1=Least appropriate 9=Most appropriate		

Abbreviations: CT, computed tomography; MRI, magnetic resonance imaging

Variant 2: Suspect occult injury; e.g., osteochondral injury; plain films nondiagnostic.

Radiologic Exam Procedure	Appropriateness Rating	Comments
MRI		
No intra-articular contrast	9	
Intra-articular contrast	2	
CT		
With or without contrast	2	
Tomography	2	
<p>Appropriateness Criteria Scale  1 2 3 4 5 6 7 8 9  1=Least appropriate 9=Most appropriate</p>		

Variant 3: Suspect unstable osteochondral injury; plain films nondiagnostic.

Radiologic Exam Procedure	Appropriateness Rating	Comments
MRI		
With or without intra-articular contrast	8	
CT		
With or without contrast	2	
Arthrogram, positive contrast	2	
Arthrogram, air only	2	
Arthrogram, double contrast	2	

Radiologic Exam Procedure	Appropriateness Rating	Comments
Tomography	2	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1=Least appropriate 9=Most appropriate		

Variant 4: Suspect nerve entrapment or mass; plain films nondiagnostic.

Radiologic Exam Procedure	Appropriateness Rating	Comments
MRI	9	
Ultrasound	5	An alternative to MRI if expertise is available.
No imaging indicated	2	
CT	2	
Radionuclide bone scan	2	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1=Least appropriate 9=Most appropriate		

Abbreviations: CT, computed tomography; MRI, magnetic resonance imaging

Variant 5: Suspect chronic epicondylitis; plain films nondiagnostic.

Radiologic Exam Procedure	Appropriateness Rating	Comments
MRI		
No intra-articular contrast	9	
Intra-articular contrast	2	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1=Least appropriate 9=Most appropriate		

Variant 6: Suspect collateral ligament tear; plain films nondiagnostic.

Radiologic Exam Procedure	Appropriateness Rating	Comments
MRI	9	
CT	2	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1=Least appropriate 9=Most appropriate		

Variant 7: Suspect biceps tendon tear and/or bursitis; plain films nondiagnostic.

Radiologic Exam Procedure	Appropriateness Rating	Comments
MRI		
No intra-articular contrast	9	
Ultrasound	5	An alternative to MRI if expertise available.
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1=Least appropriate 9=Most appropriate		

Abbreviations: CT, computed tomography; MRI, magnetic resonance imaging

### Summary

#### Osteochondral Lesion or Intra-articular Osteocartilaginous Body

Radiographs are required before other imaging studies and may be diagnostic for osteochondral fracture, osteochondritis dissecans, and osteocartilaginous intra-articular body (IAB). Tomography, single and double contrast arthrography with or without computed tomography (CT), and CT alone have been used for detecting an osteochondral lesion or IAB. All of these studies have limitations; a small IAB may be obscured by contrast or confused with air bubbles (double contrast arthrography). A CT air arthrogram can avoid confusion of air bubbles with IABs. More recently, magnetic resonance imaging (MRI) has been advocated as the initial study for suspected osteochondral fracture or IAB. Regardless of method, detection of an IAB is limited by its size and location within the elbow joint. Detection of IAB is enhanced by the presence of joint effusion. Magnetic resonance arthrography (MRA) is preferred to routine MRI for diagnosis of IAB and may also play a role in improving diagnosis of stability of the osteochondral lesion.

#### Tendon, Ligament, Muscle, Nerve, or Other Soft-Tissue Abnormality

Radiographs can be useful to identify heterotopic calcification (ossification) of the ulnar collateral ligament. This finding may be associated with partial or complete tears of that structure. Avulsion of the ulnar collateral ligament at the insertion site on the ulna is a source of chronic medial elbow pain in the throwing athlete. This finding is best evaluated with a combination of radiographs and coronal MR (magnetic resonance) images. Magnetic resonance imaging may provide important diagnostic information for evaluating the adult elbow in many different conditions, including: collateral ligament injury, epicondylitis, injury to the biceps and triceps tendons, abnormality of the ulnar, radial, or median nerve, and for masses about the elbow joint. There is a lack of studies showing the sensitivity and specificity of MR in many of these entities; most of the studies demonstrate MR findings in patients either known or highly likely to have a specific condition. Ultrasound (US) has been shown to be helpful for diagnosis of complete and partial tears of the distal biceps tendon, providing an alternative to MRI.

With use of appropriate pulse sequences, MRI is an effective tool in the preoperative diagnosis of posterolateral rotatory instability. This includes assessment of the ulnar band of the lateral collateral ligament. Magnetic resonance arthrography has been advocated to distinguish complete tears from partial tears of the medial collateral ligament. Epicondylitis (lateral – "tennis elbow" or medial – in pitchers, golfers, and tennis players) is a common clinical diagnosis, and MRI is usually not necessary. Magnetic resonance may be useful for confirmation of the diagnosis in refractory cases and to exclude associated tendon and ligament tear.

Bicipitoradial bursitis is a source of elbow pain that can be assessed with MRI. Magnetic resonance imaging also demonstrates the effects of the bursa on adjacent structures.

The ulnar nerve is particularly vulnerable to trauma from a direct blow in the region of its superficial location in the restricted space of the cubital tunnel. Anatomic variations of the cubital tunnel retinaculum may contribute to ulnar neuropathy. Axial T1-weighted images have been shown to depict the size and shape of the nerve, and axial T2-weighted or STIR images may show increased signal in the presence of neuritis. A snapping of the medial head of the triceps can cause recurrent dislocation of the ulnar nerve. This diagnosis can be confirmed with MRI or CT using axial images with the elbow in flexion and extension. Ultrasound can also be used for confirmation of snapping triceps. Radial nerve and median nerve entrapment syndromes may also be evaluated with MRI.

#### CLINICAL ALGORITHM(S)

Algorithms were not developed from criteria guidelines.

### EVIDENCE SUPPORTING THE RECOMMENDATIONS

#### TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The recommendations are based on analysis of the current literature and expert panel consensus.

## BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

### POTENTIAL BENEFITS

Appropriate selection of radiologic exam procedures to evaluate chronic elbow pain

### POTENTIAL HARMS

Not stated

## QUALIFYING STATEMENTS

### QUALIFYING STATEMENTS

An American College of Radiology (ACR) Committee on Appropriateness Criteria and its expert panels have developed criteria for determining appropriate imaging examinations for diagnosis and treatment of specified medical condition(s). These criteria are intended to guide radiologists, radiation oncologists, and referring physicians in making decisions regarding radiologic imaging and treatment. Generally, the complexity and severity of a patient's clinical condition should dictate the selection of appropriate imaging procedures or treatments. Only those exams generally used for evaluation of the patient's condition are ranked. Other imaging studies necessary to evaluate other co-existent diseases or other medical consequences of this condition are not considered in this document. The availability of equipment or personnel may influence the selection of appropriate imaging procedures or treatments. Imaging techniques classified as investigational by the U.S. Food and Drug Administration (FDA) have not been considered in developing these criteria; however, study of new equipment and applications should be encouraged. The ultimate decision regarding the appropriateness of any specific radiologic examination or treatment must be made by the referring physician and radiologist in light of all the circumstances presented in an individual examination.

## IMPLEMENTATION OF THE GUIDELINE

### DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

## INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

### IOM CARE NEED

Living with Illness

### IOM DOMAIN

Effectiveness

## IDENTIFYING INFORMATION AND AVAILABILITY

### BIBLIOGRAPHIC SOURCE(S)

American College of Radiology (ACR), Expert Panel on Musculoskeletal Imaging. Chronic elbow pain. Reston (VA): American College of Radiology (ACR); 2001. 5 p. (ACR appropriateness criteria). [29 references]

### ADAPTATION

Not applicable: The guideline was not adapted from another source.

### DATE RELEASED

1998 (revised 2001)

### GUIDELINE DEVELOPER(S)

American College of Radiology - Medical Specialty Society

### SOURCE(S) OF FUNDING

The American College of Radiology (ACR) provided the funding and the resources for these ACR Appropriateness Criteria™.

### GUIDELINE COMMITTEE

ACR Appropriateness Criteria™ Committee, Expert Panel on Musculoskeletal Imaging

### COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Panel Members: Lynne S. Steinbach, MD; Murray K. Dalinka, MD; Naomi Alazraki, MD; Richard H. Daffner, MD; Arthur A. DeSmet, MD; George Y. El-Khoury, MD; John B. Kneeland, MD; B.J. Manaster, MD, PhD; Helene Pavlov, MD; David A. Rubin, MD; Murali Sundaram, MD; Barbara N. Weissman, MD; Robert H. Haralson III, MD; John B. McCabe, MD

### FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

### GUIDELINE STATUS

This is the current release of the guideline. It updates a previous version: ACR Appropriateness Criteria™ for chronic elbow pain. Radiology 2000 Jun;215(Suppl):339-43.

The ACR Appropriateness Criteria™ are reviewed every five years, if not sooner, depending on the introduction of new and highly significant scientific evidence. The next review date for this topic is 2006.

#### GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the [American College of Radiology \(ACR\) Web site](#).

Print copies: Available from the American College of Radiology, 1891 Preston White Drive, Reston, VA 20191. Telephone: (703) 648-8900.

#### AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- American College of Radiology ACR Appropriateness Criteria™ introduction. Reston (VA): American College of Radiology; 6 p. Available in Portable Document Format (PDF) from the [ACR Web site](#).

#### PATIENT RESOURCES

None available

#### NGC STATUS

This summary was completed by ECRI on May 6, 2001. The information was verified by the guideline developer as of June 29, 2001. This summary was updated by ECRI on July 31, 2002. The updated information was verified by the guideline developer on October 1, 2002.

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